PROPOSAL TO INCLUDE A DEVELOPMENTAL TRAUMA DISORDER DIAGNOSIS FOR CHILDREN AND ADOLESCENTS IN DSM-V

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Statement of Purpose

The goal of introducing the diagnosis of Developmental Trauma Disorder is to capture the reality of the clinical presentations of children and adolescents exposed to chronic interpersonal trauma and thereby guide clinicians to develop and utilize effective interventions and for researchers to study the neurobiology and transmission of chronic interpersonal violence. Whether or not they exhibit symptoms of PTSD, children who have developed in the context of ongoing danger, maltreatment, and inadequate caregiving systems are ill-served by the current diagnostic system, as it frequently leads to no diagnosis, multiple unrelated diagnoses, an emphasis on behavioral control without recognition of interpersonal trauma and lack of safety in the etiology of symptoms, and a lack of attention to ameliorating the developmental disruptions that underlie the symptoms. What follows are our proposed diagnostic criteria, a brief review of published and unpublished data, rationale and assessment of the reliability and validity data which bear upon this topic, as well as the justification for meeting the criteria for creating a new diagnosis in the DSM V.

Introduction

The introduction of PTSD in the psychiatric classification system in 1980 has led to extensive scientific studies of that diagnosis. However, over the past 25 years there has been a relatively independent and parallel emergence of the field of Developmental Psychopathology (e.g. Maughan & Cicchetti, 2002; Putnam, Trickett, Yehuda, & McFarlane, 1997), which has documented the effects of interpersonal trauma and disruption of caregiving systems on the development of affect regulation, attention, cognition, perception, and interpersonal relationships. A third significant development has been the increasing documentation of the effects of adverse early life experiences on brain development (e.g. De Bellis et al., 2002; Teicher et al., 2003), neuroendocrinology (e.g.Hart, Gunnar, & Cicchetti, 1995; Lipschitz et al., 2003) and immunology (e.g. Putnam et al., 1997; Wilson et al, 1999).

Studies of both child and adult populations over the last 25 years have established that, in a majority of trauma-exposed individuals, traumatic stress in childhood does not occur in isolation, but rather is characterized by co-occurring, often chronic, types of victimization and other adverse experiences (Anda et al., 2006; Dong et al., 2004; Pynoos et al., 2008; Spinazzola et al., 2005; van der Kolk et al, 2005).

The impetus for the field trial for Disorders of Extreme Stress (DES) for the DSM IV (Pelcovitz, Kaplan, DeRosa, Mandel, & Salzinger, 2000; Roth, Newman, Pelcovitz, van der Kolk, & Mandel, 1997; van der Kolk, Pelcovitz, Roth, & Mandel, 1996) was to describe the psychopathology of adults who, as children, had been traumatized by interpersonal violence in the context of inadequate caregiving systems. This retrospective study clearly demonstrated the differential impact of interpersonal trauma on adults who as children were exposed to chronic interpersonal trauma, compared to patients who, as mature adults, had been exposed to assaults, disasters or accidents. The DES symptom constellation was ultimately incorporated in the DSM IV as “associated features of PTSD.”

The recognition of the profound difference between adult onset PTSD and the clinical effects of interpersonal violence on children, as well as the need to develop effective treatments for these children, were the principal reasons for the establishment of the National Child Traumatic Stress Network in 2001. Less than eight years later it has become evident that the current diagnostic classification system is inadequate for the tens of thousands of traumatized children receiving psychiatric care for trauma-related difficulties.

PTSD is a frequent consequence of single traumatic events (Green et al., 2000). Research also supports that PTSD, with minor modifications, also is an adequate diagnosis to capture the effects of single incidence trauma in children who live in safe and predictable caregiving systems. Even as many children with complex trauma histories exhibit some symptoms of PTSD (see, e.g., Chicago Child Trauma Center data below), multiple databases (see below) show that the diagnosis of PTSD does not adequately capture the symptoms of children who are victims of interpersonal violence in the context of inadequate caregiving systems. In fact, multiple studies show that the majority meet criteria for multiple other DSM diagnoses. In one study of 364 abused children (Ackerman, Newton, McPherson, Jones, & Dykman, 1998), 58% had the primary diagnosis of separation anxiety/overanxious disorders, 36% phobic disorders, 35% PTSD, 22% attention deficit hyperactivity disorder (ADHD) and 22% oppositional defiant disorder. In a prospective study by Noll, Trickett and Putnam (2003) of a group of sexually abused girls, anxiety, oppositional defiant disorder and phobia were clustered in one group, while depression, suicidality, PTSD, ADHD and conduct disorder represented another cluster.

A survey of 1,699 children receiving trauma-focused treatment across 25 network sites of the National Child Traumatic Stress Network (Spinazzola et al, 2005) showed that the vast majority (78%) had been exposed to multiple and/or prolonged interpersonal trauma, with a modal 3 trauma exposure types; less than ¼ met diagnostic criteria for PTSD. Fewer than 10% were exposed to serious accidents or medical illness. Most children exhibited posttraumatic sequelae not captured by PTSD: at least 50% had significant disturbances in affect regulation; attention & concentration; negative self-image; impulse control; aggression; and risk taking. These findings are in line with the voluminous epidemiological, biological and psychological research on the impact of childhood interpersonal trauma of the past two decades that has studied its effects on tens of thousands of children. Because no other diagnostic options are currently available, these symptoms currently would need to be relegated to a variety of seemingly unrelated co-morbidities, such as bipolar disorder, ADHD, PTSD, conduct disorder, phobic anxiety, reactive attachment disorder and separation anxiety. Analysis of data from the Chicago Child Trauma Center found that children who experienced ongoing traumatic stress in combination with inadequate caregiving systems were 1.5 times more likely than other trauma-exposed children to meet criteria for non-trauma-related diagnoses. Given the data, it is critical to find a way out of this morass of multiple comorbid diagnoses and to identify a new diagnostic category that explains the profusion of symptoms in these children.

The primary reason for introducing the diagnosis of Developmental Trauma Disorder is to capture the reality of the clinical presentations of children and adolescents

exposed to chronic interpersonal trauma and thereby to guide clinicians to develop and utilize effective interventions and for researchers to study the neurobiology and transmission of chronic interpersonal violence. Whether or not they exhibit symptoms of PTSD, children who have developed in the context of ongoing danger, maltreatment, and inadequate caregiving systems, are ill-served by the current diagnostic system, as it frequently leads to no diagnosis, multiple unrelated diagnoses, an emphasis on behavioral control without recognition of interpersonal trauma in the etiology of symptoms, and a lack of attention to ameliorating the developmental disruptions underlying symptoms. Three problems with the current diagnostic system have been revealed for maltreated children: no diagnosis, inaccurate diagnosis, and inadequate diagnosis.

No Diagnosis

Analysis of two large databases suggests that many children exposed to trauma and maltreatment are unlikely to receive a diagnosis of PTSD. Initial data from the Child and Adolescent Needs and Strengths (CANS) dataset utilized screening of 7,668 foster children in Illinois Department of Children and Family Services custody. Based on CANS ratings, 3376 of these children (44%) had been exposed to sexual abuse, physical abuse, or domestic violence, 3785 (49%) had been neglected, and 1199 (16%) had experienced emotional abuse. All children had been removed from the care of their biological parents and many had experienced other forms of trauma and adversity not examined in this analysis. Based on CANS ratings, 4872 of these children (63%) exhibited trauma-related symptoms, including but not limited to PTSD. Only 272 of these children (5.5% of the children with trauma symptoms) had CANS ratings that included both re-experiencing and avoidance in accord with PTSD criteria. In other words, nearly 95% of the children in the Illinois child welfare system that have been identified as having clinically significant trauma-related symptoms **will not qualify** for a diagnosis of PTSD. Pynoos et al. (2008) reported findings from analysis of the National Child Traumatic Stress Network Core Data Set, a national sample of 9,336 children receiving services at NCTSN child trauma centers. Over 70% of these children experienced multiple forms of trauma and adversity, with 48% exhibiting clinically significant behavior problems in the home or community, 41% academic problems, 37% behavior problems in school/daycare, 31% attachment problems, and 11% suicidality. Despite the very high levels of trauma exposure and clinical problems in this sample of children, only 24% were reported to meet diagnostic criteria for PTSD. Similarly, Richardson et al. (Richardson, Henry, Black-Pond, & Sloane, 2008) reported that, although nearly all child welfare system-involved children who had experienced maltreatment for over one year had clinically significant symptoms, 46% did not meet criteria for any existing DSM-IV diagnosis.

Inaccurate Diagnosis

In the absence of a trauma-related diagnosis for which they meet criteria, children with complex trauma-related symptoms frequently receive other diagnoses, which is likely to lead to ineffective treatment. Many children served by the Chicago Child Trauma Center, for example, present for services with prior diagnoses of Bipolar Disorder, ADHD, or both, with the respective psychopharmacological interventions. Many have not received any psychotherapeutic intervention, let alone intervention

focused on their histories of trauma, and many actually exhibit increases in symptoms when medicated (Stolbach, personal communication, January 25, 2009).

Exposure to chronic traumatic stress may set the stage for developmental trajectories characterized by multiple forms of emotional and behavioral difficulty which could qualify them for myriad DSM diagnoses. For example, analyzing the National Comorbidity Study - Replication Sample (N=5692), Putnam et al. (2008) found that adults reporting 4 or more childhood traumas or markers of family dysfunction (sexual abuse, physical abuse, exposure to domestic violence, crime victim, depressed parent, substance abusing parent or loss of a parent) met full DSM-IV diagnostic criteria for an average of 6.29 (+/- 0.3) lifetime DSM diagnoses. However, only 19% of males and 54% of females met criteria for lifetime PTSD. Drug and alcohol abuse, panic attacks, major depressive episodes and disorder, and intermittent explosive disorder were common comorbid diagnoses for both males and females.

Inadequate Diagnosis

Even in settings in which a majority of children with complex trauma-related clinical presentations meet full criteria for PTSD (see Table 6, for example), the diagnosis at best fails to capture many of their most clinically salient symptoms, and, at worst, may lead to incomplete interventions. Proven, evidence-based, short-term treatments for PTSD, while leading to reductions in PTSD symptoms and diagnosis,.by definition do not address the pervasive developmental impairments that characterize children with Developmental Trauma Disorder, such as impaired capacity for emotional and behavioral regulation, and attachment-related difficulties. In addition, completion of short-term interventions for PTSD may create the false impression in both clinicians and clients that the trauma has been addressed and that symptoms that remain are therefore related to factors other than the child's history. This may in turn lead to the application of additional non-trauma-related diagnoses, such as ADHD, ODD, Bipolar Disorder, etc.

An Alternative Diagnosis

Suggesting that an alternative diagnosis was necessary to capture the spectrum of coherent symptoms of children exposed to interpersonal violence and disruptions in caregiving, van der Kolk (2005) proposed the creation of a Developmental Trauma Disorder diagnosis and described the broad domains of impairment and distress that characterize these children and adolescents. Based upon empirical data, clinical observation and experience, and two decades of literature on developmental psychopathology and the effects of ongoing childhood adverse experiences and trauma, the National Child Traumatic Stress Network subsequently devised the consensus proposed criteria for Developmental Trauma Disorder. These proposed criteria are intended to describe the most clinically significant symptoms exhibited by many children and adolescents following complex trauma. While substantial evidence led to the consensus criteria, the study of complex trauma-related difficulties in children is still evolving. The traumatic stress literature has, until recently, focused largely on the effects of single types of trauma (e.g., sexual assault or sexual abuse) and on isolated diagnoses or symptom sets, (e.g., PTSD or attributional style). With the consensus

criteria it will now be possible to conduct field trials to more precisely delineate which children meet criteria for Developmental Trauma Disorder, what conditions and predispositions make children vulnerable to develop DTD, which symptoms are most unique to developmental trauma, and which are shared with children with other disorders without trauma exposure, and to further validate the diagnosis and the constructs underlying it.

CONSENSUS PROPOSED CRITERIA FOR DEVELOPMENTAL TRAUMA DISORDER

A. Exposure. The child or adolescent has experienced or witnessed multiple or prolonged adverse events over a period of at least one year beginning in childhood or early adolescence, including:

A. 1. Direct experience or witnessing of repeated and severe episodes of interpersonal violence; and

A. 2. Significant disruptions of protective caregiving as the result of repeated changes in primary caregiver; repeated separation from the primary caregiver; or exposure to severe and persistent emotional abuse

B. Affective and Physiological Dysregulation. The child exhibits impaired normative developmental competencies related to arousal regulation, including at least two of the following:

B. 1. Inability to modulate, tolerate, or recover from extreme affect states (e.g., fear, anger, shame), including prolonged and extreme tantrums, or immobilization

B. 2. Disturbances in regulation in bodily functions (e.g. persistent disturbances in sleeping, eating, and elimination; over-reactivity or under-reactivity to touch and sounds; disorganization during routine transitions)

B. 3. Diminished awareness/dissociation of sensations, emotions and bodily states

B. 4. Impaired capacity to describe emotions or bodily states

C. Attentional and Behavioral Dysregulation: The child exhibits impaired normative developmental competencies related to sustained attention, learning, or coping with stress, including at least three of the following:

C. 1. Preoccupation with threat, or impaired capacity to perceive threat, including misreading of safety and danger cues

C. 2. Impaired capacity for self-protection, including extreme risk-taking or thrill-seeking

C. 3. Maladaptive attempts at self-soothing (e.g., rocking and other rhythmical movements, compulsive masturbation)

C. 4. Habitual (intentional or automatic) or reactive self-harm

C. 5. Inability to initiate or sustain goal-directed behavior

D. Self and Relational Dysregulation. The child exhibits impaired normative developmental competencies in their sense of personal identity and involvement in relationships, including at least three of the following:

D. 1. Intense preoccupation with safety of the caregiver or other loved ones (including precocious caregiving) or difficulty tolerating reunion with them after separation

D. 2. Persistent negative sense of self, including self-loathing, helplessness, worthlessness, ineffectiveness, or defectiveness

D. 3. Extreme and persistent distrust, defiance or lack of reciprocal behavior in close relationships with adults or peers

D. 4. Reactive physical or verbal aggression toward peers, caregivers, or other adults

D. 5. Inappropriate (excessive or promiscuous) attempts to get intimate contact (including but not limited to sexual or physical intimacy) or excessive reliance on peers or adults for safety and reassurance

D. 6. Impaired capacity to regulate empathic arousal as evidenced by lack of empathy for, or intolerance of, expressions of distress of others, or excessive responsiveness to the distress of others

E. Posttraumatic Spectrum Symptoms. The child exhibits at least one symptom in at least two of the three PTSD symptom clusters B, C, & D.

F. Duration of disturbance (symptoms in DTD Criteria B, C, D, and E) at least 6 months.

G. Functional Impairment. The disturbance causes clinically significant distress or impairment in at two of the following areas of functioning:

- Scholastic: under-performance, non-attendance, disciplinary problems, drop-out, failure to complete degree/credential(s), conflict with school personnel, learning disabilities or intellectual impairment that cannot be accounted for by neurological or other factors.

- Familial: conflict, avoidance/passivity, running away, detachment and surrogate replacements, attempts to physically or emotionally hurt family members, non-fulfillment of responsibilities within the family.

- Peer Group: isolation, deviant affiliations, persistent physical or emotional conflict, avoidance/passivity, involvement in violence or unsafe acts, age-inappropriate affiliations or style of interaction.

- Legal: arrests/recidivism, detention, convictions, incarceration, violation of probation or other court orders, increasingly severe offenses, crimes against other persons, disregard or contempt for the law or for conventional moral standards.

- Health: physical illness or problems that cannot be fully accounted for physical injury or degeneration, involving the digestive, neurological (including conversion symptoms and analgesia), sexual, immune, cardiopulmonary, proprioceptive, or sensory systems, or severe headaches (including migraine) or chronic pain or fatigue.

- Vocational (*for youth involved in, seeking or referred for employment, volunteer work or job training*): disinterest in work/vocation, inability to get or keep jobs, persistent conflict with co-workers or supervisors, under-employment in relation to abilities, failure to achieve expectable advancements.

Evidence for Developmental Trauma Disorder

Because the concept of Developmental Trauma Disorder is relatively new (van der Kolk, 2005), much of the research supporting the consensus proposed DTD criteria remains unpublished. For the purpose of this paper, we rely both upon published findings and ongoing unpublished data collection efforts from the NCTSN and its affiliates. (See Table 1 below for details.) Briefly, these data are referred to as: the NCTSN Survey (Spinazzola et al., 2005), the NCTSN Core Data Set (Pynoos et al.), the CANS study (McClelland et al.), the Chicago Child Trauma Center (CCTC) study (Stolbach et al.), and the Western Michigan Dataset (Richardson et al., 2008). Because these data are collected by multiple independent investigators, characteristics of each sample differ. Tables 2-6 include findings from the NCTSN Core Data Set, the CANS study, and the CCTC study. Where applicable, published data and data under review or in press are also cited. Where applicable, the designation DTD+ will refer to children whose trauma exposure approximates the proposed DTD criterion A, where DTD- refers to children who did not experience DTD criterion A. A summary of the findings of the NCTSN Survey, NCTSN Core Data Set, CANS study, and CCTC study relative to each of the proposed DTD criteria can be found in Table 7.

Table 1. Data Sources

Dataset	Contributors	N	Sample Source
NCTSN Survey	Spinazzola, J., Ford, J.D., Zucker, M., van der Kolk, B.A., Silva, S., Smith, S.F., and Blaustein, M.	1699	Clients at NCTSN sites
NCTSN Core Data Set	Pynoos, R.S., Ostrowski, S., Fairbank, J.A., Briggs-King, E.C., Steinberg, A., Layne, C., and Stolbach, B.	4435	Clients at NCTSN sites
CANS Dataset	McClelland, G., Fehrenbach, T., Griffin, E., Burkman, K., and Kisiel, C.	7668	All Illinois Foster Care system
CCTC Dataset	Stolbach, B.C., Dominguez, R.Z., and Rompala, V.	172	All PTSD Criterion A-exposed; none have risk to self or others
Western Michigan Dataset	Richardson, M., Henry, J., Black-Pond, C., and Sloane, M.	209	Foster care
Ford (In press, Journal of Clinical Psychiatry)	Ford, J.D., O'Connor, D.F., and Hawke, J.	397	Child psychiatry inpatients
NSA re-analysis	Ford, J. D., Elhai, J. D., Connor, D. F., and Frueh, B. C.	4023	National random
Juvenile Justice	Ford, J. D., Hawke, J., and Chapman, J.	1825	Juvenile Detention Centers
Ghosh Ippen and	Ghosh Ippen, C.G., Harris, W.W., Van	89	Preschoolers exposed

Criterion A: Exposure

Criterion A requires multiple, ongoing exposures to both interpersonal violence and disruptions in caregiving. The rationale for DTD Criterion A was discussed at length in the introduction. As is outlined below, findings from all of the data sets summarized here suggest that children who experienced ongoing interpersonal violence in combination with disruptions in protective caregiving were characterized by high levels of symptoms and developmental impairment consistent with the proposed DTD criteria. Additionally, these symptoms and impairments were more prevalent in DTD+ children than in other trauma-exposed children and non-trauma-exposed children.

Cluster B: Affective and Physiological Dysregulation

B.1. Inability to modulate, tolerate, or recover from extreme affect states.

Inability to modulate affect includes extreme affective shifts, inability to calm down after strong affective experiences, persistent or unmanaged negative mood, and hyper-responsiveness to low-grade affective stimuli. The NCTSN clinician survey demonstrated that DTD+ children are characterized by **difficulties with modulating affect**. Analysis of the NCTSN Core Data Set demonstrated that DTD+ children had more **pervasive depressed mood** than others, even when statistically controlling for PTSD symptom severity. In the CANS study, DTD+ children had more **affect dysregulation problems** and **depressed mood** more often than other foster children. The CCTC found that DTD+ children were reported by clinicians to have **extreme affective shifts**, **depressed mood**, **inability to self-soothe**, **problems managing anger**, and **internalized negative affect** more often than other trauma-exposed children. CCTC DTD+ children also reported more symptoms of **dysthymia** on structured diagnostic interview than others. In both the Core Data Set and CCTC data, these findings held true even when controlling for PTSD severity. In other words, the pervasive difficulties with affect regulation exhibited by children exposed to ongoing interpersonal violence in combination with disruptions in protective caregiving are not a function of the presence or severity of PTSD symptoms.

B.2. Disturbances in regulation of bodily functions.

Disturbance in developmentally expected capacity for regulation of bodily functions includes disruptions of sleep, eating, digestion, hyper-reactivity to physical stimuli. These disruptions may especially occur in the presence of low-grade stressors such as routine transitions. The NCTSN clinician survey showed that a third of DTD+ children have significant **physiological manifestations of stress**. The NCTSN Core Data Set showed that DTD+ children had more **sleep disturbances** and **physical manifestations of stress** than others, even when statistically controlling for PTSD

symptom severity. The CCTC data show that 73% of DTD+ children had **sleep difficulties**. Richardson et al. (2008) reported that DTD+ children were characterized by **oversensitivity to touch and sounds**, and that over half had delays in numerous developmental domains, including fine motor development.

The published literature on chronic abuse consistently documents significant disturbances of physiological self-regulation in the areas of **sleep** (Egger, Costello, Erkanli, & Angold, 1999; Glod, Teicher, Hartman, & Harakal, 1997; Noll, Trickett, Susman, & Putnam, 2006) **oversensitivity to touch and sounds** (Wells, McCann, Adams, & Voris, 1995), and **disorganization during transitions** (Alessandri, 1991)

B.3. Diminished awareness/dissociation of sensations, emotions and bodily states

Diminished awareness or dissociation of emotion, sensation and bodily states is manifested as depersonalization, lack of awareness of the external environment, discontinuity in affective states, affective numbing, physical analgesia, and difficulty knowing emotions. The CANS Dataset showed that DTD+ children had problems with **dissociation** five times as often as other foster children. The NCTSN Survey found that a quarter of DTD+ children have **dissociative affect**. In the NCTSN Core Data Set DTD+ children had more problems with **dissociation** others, even when statistically controlling for PTSD symptom severity. The CCTC data demonstrated that a significant proportion of DTD+ children were characterized by **dissociation of painful/negative affect**. CCTC DTD+ children significantly differed from other trauma-exposed children with respect to **affective shifts**, **difficulty knowing/describing emotions, depersonalization**, and **shifts in awareness of the environment**. Significant group differences were also found in the CCTC sample in scores on the **Child Dissociative Checklist** (Putnam, 1993) and in the frequency of **clinical dissociation**. These data indicate that children exposed to DTD criterion A Traumatic Stressors experience a diminished awareness of sensation, emotion and bodily states above and beyond what is experienced by non-DTD criterion A-exposed children. Other research has documented **diminished awareness** (Camras, Grow, & Ribordy, 1983; Tsuboi & Lee, 2007; Brown, Houck, Hadley, & Lescano, 2005; Macfie, Cicchetti, & Toth, 2001; Tsuboi & Lee, 2007; Camras et al., 1983; Brown et al., 2005; Goldsmith & Freyd, 2005; Macfie et al., 2001).

B.4. Impaired capacity to describe emotions or bodily states

An impaired capacity to describe emotions or bodily states may manifest as difficulties in emotion labeling, difficulties describing internal states, and difficulties communicating needs such as hunger or elimination. DTD+ children in the CCTC Study were reported to have **difficulty labeling and expressing emotions**, and **difficulty communicating wishes and desires, and difficulty knowing and describing internal states** more often than other trauma-exposed children. These findings are consistent with those previously reported in the literature (Sayar, Kose, Grabe, & Topbas, 2005; Zhu, Li, & Liang, 2006).

C. Attentional and Behavioral Dysregulation.

C.1. Preoccupation with threat, or impaired capacity to perceive threat, including misreading of safety and danger cues

Criterion C.1. has been documented as attention biases disproportionately towards or away from threat. This item may manifest as difficulties with perception of safety versus threat, or absorption with threat detection. Data from the NCTSN clinician survey demonstrate that a fifth of DTD+ children have **persistent social fears**. DTD+ children from the CCTC Dataset were more frequently reported to have difficulties with **misperception of social context**, **narrowed focus of attention** (e.g., increased focus on threat), and **shifts in awareness of the environment** (e.g., in response to threat) than other trauma-exposed children. These findings are consistent with published data (Pine et al., 2005; Pollak & Tolley-Schell, 2003).

C.2. Impaired capacity for self-protection, including extreme risk-taking or thrill-seeking.

Criterion C.2. has been documented in risk-taking behavior such firesetting, sexual risk-taking, or pursuit of activities which pose developmentally inappropriate degree of risk. This criterion also incorporates misperception of risk. Data from the CANS dataset demonstrated that DTD+ children had **impulse control** problems, problems with **judgment**, and **firesetting** twice as often as other foster children. The NCTSN Survey found that a majority of DTD+ children had **difficulties with regulating impulses to maintain safety** and difficulties with **risk-taking**. The CCTC data documented that DTD+ children were reported to have **difficulty understanding rules**, **difficulties with anticipating consequences**, **difficulties with abilities to plan and anticipate**, **sexualized behavior**, and **over- or under-estimation of risk** more often than other trauma-exposed children. These findings are consistent with published data (Bergen, Martin, Richardson, Allison, & Roeger, 2003; Brown et al., 2005).

C.3. Maladaptive attempts at self-soothing.

Criterion C.3. has been documented as chronic masturbation, rocking, self-harm, or other repetitive self-stimulating behaviors. Data from the NCTSN Core Data Set demonstrate that DTD+ children and adolescents had more **substance abuse** problems than others, even when statistically controlling for PTSD symptom severity. Other studies have documented that substance abuse often occurs as a maladaptive self-soothing behavior (Dorard, Berthoz, Phan, Corcos, & Bungener, 2008). CCTC data provide some indication to the extent of maladaptive self-soothing behaviors. DTD+ children were reported by clinicians to exhibit **sexualized behaviors** and **inability to self-soothe** more than other trauma-exposed children. CCTC DTD+ children also had significantly higher scores on the **Child Sexual Behavior Inventory** (Friedrich, 1997) than other trauma-exposed children even though there were no differences in the frequency of exposure to sexual abuse between DTD+ and DTD- children. Ford et al. (under review) demonstrated that children exposed to abuse were more likely than children exposed to other traumas to have difficulties with **substance use**. In a Juvenile

Justice sample, Ford et al. also demonstrated that DTD+ children were more likely to have **substance use** problems and **suicide risk** even when controlling for symptoms of PTSD, depression, and anxiety.

C.4. Habitual or reactive self-harm.

Habitual or reactive self-harm may include cutting, hitting onself, picking one's skin, head banging, burning oneself or other obviously harmful behaviors. The CANS Study found that children exposed to DTD Criterion A Traumatic stressors had **self-mutilation** problems three times as often as other trauma-exposed foster children, and eight times as often as foster children with no trauma exposure. Although self-injury was not highly prevalent in the CCTC sample (which does not include children who are a danger to self or others), DTD+ children were nearly four times more likely than other trauma-exposed children to exhibit **self-injurious behavior**. Ford et al. reported that in a Juvenile Justice sample, DTD+ children and adolescents had higher levels of **suicide risk** than others.

C.5. Inability to initiate or sustain goal-directed behavior.

An inability to sustain goal-directed behavior may include a lack of curiosity, difficulties with planning or completing tasks, or avolition. Nearly half of CCTC DTD+ children were exhibited problems with age-appropriate **capacity to focus on and complete tasks** and 40% were reported to have problems with age-appropriate **capacity to plan and anticipate**. CCTC DTD+ children were more than twice as likely as other trauma-exposed children to have impairments in their **ability to organize behavior to achieve rewards in the environment.** Other studies report similar findings (Ayoub et al., 2006; Nolin & Ethier, 2007;Smith & Walden, 1999)

<u>D. Self and Relational Dysregulation</u>

D.1. Intense preoccupation with safety of the caregiver or loved ones, or difficulty tolerating reunion with them after separation.

Criterion D.1. refers to attachment difficulties which are experienced by a significant number of children exposed to ongoing interpersonal violence and disruptions of protective caregiving. The NCTSN Survey found that a quarter of DTD+ children had difficulties with **intense preoccupation with caregivers**, **difficulties separating from caregivers**, or other **attachment problems**. Data from the NCTSN Core Data Set demonstrate that DTD+ children had more difficulties with **separation anxiety** and more **attachment problems** than others, even when statistically controlling for PTSD symptom severity. In the CANS Study, DTD+ children had **attachment problems** twice as often as other foster children. Similar findings are reported in the

literature on attachment and maltreatment (Baer & Martinez, 2006; Finzi, Cohen, Sapir, & Weizman, 2000; Finzi, Ram, Har-Even, Shnit, & Weizman, 2001).

D.2. Persistent negative sense of self, including self-loathing, helplessness, worthlessness, ineffectiveness, or defectiveness.

The NCTSN clinician survey found that a majority of DTD+ children have **negative self-image**. CCTC data document the incidence of criterion D.2. in DTD+ children. **Low feelings of self-esteem, self-confidence or self-worth** was the third most frequently reported symptom among DTD+ children as compared to the 20th ranked symptom in DTD- children. DTD+ children were also reported more often than other trauma-exposed children to exhibit **distorted cognitions of self, including negative self-image and appraisal** and **feelings of guilt or shame**, and **feeling damaged or defective**. Other published data report similar findings (Finzi, Ram, Shnit et al., 2001; Toth, Cicchetti, & Kim, 2002).

D.3. Extreme and persistent distrust, defiance or lack of reciprocal behavior in close relationships with adults or peers.

D.3. refers to distrust of others, oppositional behavior, and expectancies of victimization by others. The NCTSN Survey found that a quarter of DTD+ children exhibit **oppositional behavior**. Contrary to expectations, data from the NCTSN Core Data Set demonstrate that DTD+ children did not have more oppositional behaviors than others, whether or not statistically controlling for PTSD symptom severity. However, **behavior problems at home** were significantly elevated in DTD+ children as compared to others, even when controlling for PTSD symptoms. It is of note that many children are referred to Network sites because of behavior problems, not trauma exposure, and a failure to find a difference may represent sample characteristics not inherent to DTD. Nonetheless, oppositional behaviors and behavior problems at home were elevated in both groups. DTD+ children in the CCTC Dataset are characterized by **distrust of others** and DTD+ children experience this symptom twice as frequently as other trauma-exposed children. CCTC DTD+ children were also more likely than others to have **difficulty understanding and complying with rules**, and had higher Child Behavior Checklist **Externalizing** scores. Published data are consistent with these findings (Finzi, Ram, Har-Even et al., 2001; Lumley & Harkness, 2007; Ward & Haskett, 2008).

D.4. Reactive physical or verbal aggression toward peers, caregivers or other adults.

D.4. refers to aggression which is reactive (i.e., impulsive or dysregulated) as opposed to instrumental (i.e., intentionally coercive or manipulative). The NCTSN Survey found that almost half of DTD+ children have **aggressive behavior** problems. Data from the CANS dataset demonstrated that DTD+ children had **aggressive**

behavior problems three times as often as their peers. In the CCTC study, DTD+ children had higher CBCL **Externalizing** scores and were reported to have **volatile interpersonal relationships** significantly more than other trauma-exposed children. In a sample of repeat juvenile offenders, Silvern et al. (2008) found that DTD+ adolescents had more reactive versus instrumental aggression than other juvenile offenders. Published data are consistent with these findings (Graham-Bermann & Levendosky, 1997; Shields & Cicchetti, 1998).

D.5. Inappropriate attempts to get intimate contact or excessive reliance on peers or adults for safety and reassurance.

Criterion D.5. refers to inappropriate boundaries often displayed in children exposed to DTD Criterion A traumatic stressors. This may include sexualized behavior, inappropriate physical boundaries, or excessive self-disclosure. The NCTSN Survey found that a quarter of DTD+ children have **sexual behavior problems**. Data from the NCTSN Core Data Set demonstrate that DTD+ children had more **inappropriate sexual behaviors** than others, even when statistically controlling for PTSD symptom severity. DTD+ children in the CCTC study had significantly more **interpersonal boundary issues** and **sexualized behavior** than other trauma-exposed children, and scored higher on the **Child Sexual Behavior Inventory**. These findings are consistent with published literature (Merrick, Litrownik, Everson, & Cox, 2008; Tarren-Sweeney, 2008).

D.6. Impaired capacity to regulate empathic arousal as evidenced by lack of empathy for, or intolerance of, expressions of distress of others, or excessive responsiveness to the distress of others.

Item D.6 refers to an inability to appropriately gauge perspective in social situations, such that one either is excessively responsive to others' emotions, or unable to feel empathy. DTD+ children in the CCTC study had significantly greater feelings of **detachment or estrangement from others**, **difficulties with perspective taking**, and **difficulty attuning to others' emotional states** than other trauma-exposed children. Published data are consistent with these findings (Pears & Fisher, 2005; Pollak & Tolley-Schell, 2003).

E. PTSD symptoms.

In acknowledging that psychiatric diagnosis is moving towards dimensional diagnosis, and in acknowledgment of the fact that many children who experience DTD Criterion A stressors have PTSD symptoms, some symptoms of PTSD are necessary to meet criteria for DTD. According to the NCTSN Core Data Set, half of children who met DTD criterion A also met criteria for PTSD. In the CCTC study, 69% of DTD+ children met criteria for PTSD; however, the presence of PTSD symptoms is a typical

prerequisite for treatment at the CCTC and DTD+ and DTD- children in the CCTC sample did not differ in PTSD diagnosis or severity. In the CANS study, one third of DTD+ children had some PTSD symptoms. Although the CANS does not assess for PTSD diagnosis, only 5.5% of children with trauma-related difficulties were reported to have both re-experiencing and avoidance.

F. Functional Impairment.

Given the number of domains of impairment impacted by DTD, significant functional impairment is expected. Significant functional impairments have been found in the NCTSN Core Data Set and in the CANS data with respect to criminal involvement, job difficulties, family difficulties, health problems, school disruptions, and home behavior problems. Other published data have reported on peer difficulties. Ford, O'Connor and Hawke (in press) demonstrated that in a group children admitted for inpatient psychiatry services, children whose exposure profiles met criteria for DTD were distinguished from other children based upon their behavioral problems and lower body mass, indicating that DTD Criterion A exposure results in functional impairment in behavior and health.

Validity and Reliability

Validity and reliability of DTD criteria have been established in a variety of ways to be discussed below.

Rational for the diagnosis based upon the DSM-V-specified validators

1) Does the entity fulfill the definition of a mental disorder as specified in DSM-IV (or developed for DSM-V)?

Developmental Trauma Disorder (DTD) describes a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is associated with present distress and functional impairment in one or more important areas. The syndrome is not be merely an expectable and culturally sanctioned response to a particular event, but instead is a set of alterations in psychobiological responses and capacities that are not normative in any culture or society or for child development. DTD does not reflect problems in behavior that are defined as deviant socially or politically, although it may include behavioral manifestations that lead to legal problems or social stigma.

2) Does the disorder appear to have diagnostic validity when the DSM-V Spectrum Study Group's validators are applied?

Neural substrates: specific neural substrates for DTD have not been established because the syndrome *per se* has not been studied experimentally, clinically or epidemiologically. However, physiological, neurobiological, and neuroimaging studies have identified distinct abnormalities in brain structure and function and physiological and neurobiological responses to stress among children who have experienced traumatic stressors or neglect consistent with the A1/A2 DTD criteria. Ito (1993) found that abused children had left hemisphere EEG abnormalities in anterior, temporal and parietal areas. Ito et al. (1998) found that abused children had increased left hemisphere coherence compared to controls. Taylor (2006) found that children who experienced harsh or cold parenting showed decreased amygdala activation during an emotion observation task and a strong relationship between amygdala activation and right ventrolateral prefrontical cortical areas during an emotion labeling task, which indicates poor inhibition of the amygdala. Curtis and Cicchetti (2007) found that maltreated children categorized as nonresilient had decreased left hemisphere activation when compared to resilient maltreated children, and decreased left parietal activity compared to nonmaltreated children. EEG asymmetries were associated with observed emotion regulation.

Similarly, neuroendocrine changes have been documented in the aftermath of childhood interpersonal trauma. Bevans et al. (2008) found that exposure to childhood trauma was related to alterations in diurnal cortisol variation. Young children who experienced abuse had lower cortisol than their non-abused peers (King et al, 2001; Linares et al., 2008).

Several studies have examined the relationship symptoms to biological changes in maltreated children. Murray-Close et al. (2008) found that maltreated experiences moderated a relationship between bluted cortisol diurnation and aggression in children. Cicchetti and Rogosch (2007) found that lower morning cortisol was related to decreased resilience and increased affect dysregulation in maltreated children. Hart, Gunnar and Cicchetti (1995) found that maltreated children had blunted cortisol reactivity, which was in turn related to lower social competency. Cicchetti and Rogosch (2001) found that maltreated children with internalizing problems and co-existing internalizing and externalizing problems had elevated cortisol compared to non-maltreated children.

Familiality: Evidence of intergenerational transmission of risk for symptoms and functional impairment consistent with DTD has been established in preclinical and clinical studies. (Bevan & Higgins, 2002, Yehuda, Halligan & Grossman, 201, Teicher etal., 2006, Tajima, 2002)

Genetic risk factors: No genetic studies of DTD have been conducted. However, studies showing evidence of potential gene by environment interactions involving children exposed to maltreatment have identified candidate genes and relationships suggestive of a genetic risk for maltreatment-related symptoms consistent with DTD (Bradley et al., 2008, Cicchetti et al. 2007, Gibb et al, 2006, Savitz et al., 2007).

Specific environmental risk factors: The types of chronic interpersonal traumatic stressors specified as DTD Criterion A have been demonstrated to constitute environmental risks for the symptoms/impairments described by DTD, and to account for variance in those symptoms/impairments beyond that which can be attributed to

existing DSM-IV diagnoses including PTSD and several internalizing and externalizing disorders.

Biomarkers: No direct biomarker studies of DTD have been done. However, studies of children (and adults) who were exposed to maltreatment, family violence, and other traumatic stressors consistent with DTD Criterion A or to significant absence or disruption of protective caregiving in childhood have demonstrated distinct pathophysiological alterations linked to stress hormones, neuropeptides, neurotransmitters, neural receptors, and immune system markers (e.g., King et al, 2001, Carrion et al.2001, Carpenter et al.2007, Hart et al, 1996, Lipschitz et al, 2002, Ito et al, 1993).

Temperamental antecedents: Temperament has not been investigated specifically in relationship to DTD, but studies of children (or adults) who were exposed to maltreatment or family violence have identified temperamental risk factors for the development of symptoms and impairments consistent with DTD (e.g., inhibition, anxiety proneness, social avoidance).

Symptom similarity: DTD symptoms involve a common feature of impaired psychobiological self-regulation that makes them similar despite differences in the specific domains from which they are derived (i.e., the affective, behavioral, relational, and stress response systems).

Abnormality of cognitive or emotional processing: DTD specifically involves abnormal cognitive and emotional processing, although the symptoms are distinct from extant neuropsychological or affective disorders (e.g., Pollak, 2003; Pine et al, 2003, 2005; Camras et al, 1990; Shakman & Pollak, 1999; Kisiel & Lyons, 2001; Porter et al, 2005; Rieder & Cicchetti, 1999; Cromer et al.2006; Ayoub et al., 2006; Anyanwu et al, 2001).

Course of illness: The course of DTD-like symptoms and impairments has been shown to be characterized by chronic deterioriation with episodic spikes in severity in childhood and adolescence, as well as persistence in many cases over the lifespan.

High rates of comorbidity: children with DTD-like histories and symptoms are commonly observed to have self-regulatory, disruptive behavior, affective, anxiety, dissociative, developmental, and attachment disorders.

Treatment response: Children with DTD-like histories and symptoms specifically have been found to be particularly refractory to extant rehabilitative, psychotherapy and pharmacotherapy treatments. For example, a number of modifications of trauma-focused cognitive behavior therapy are recommended for children with severe problems with affective and behavioral dysregulation (Cohen, Mannarino, & Deblinger, 2006), and studies are being conducted with children with these problems testing variants of the treatment that do not involve intensive trauma exposure.

3) Is the disorder sufficiently distinct from other disorders to warrant designation as a separate disorder (using these validators)?

Despite likely high levels of comorbidity (which would require a field trial to definitely establish), DTD is descriptively distinct from each likely comorbid psychiatric disorder:

Posttraumatic Stress Disorder
The disorder which shares the most overlap with DTD is PTSD. However points of distinction include: (a) The stressor criterion for DTD includes only a specific subset of PTSD's A1 stressors, i.e., interpersonal violence (including sexual abuse), and DTD requires absence or disruption of protective caregiving which is not included in PTSD; (b) The affect dysregulation criterion in DTD includes extreme states of fear, anger, and emotional numbing similar to PTSD's intrusive re-experiencing, avoidance/numbing, or hyperarousal symptoms, but addresses problems in affect modulation (DTD criterion B1) and awareness (DTD criteria B2, B3) not identified in PTSD and involves a wider range of affect states (e.g., shame); (c) The behavioral dysregulation criterion in DTD includes problems consistent with PTSD's avoidance symptoms and hyperarousal (anger, hypervigilance, and impaired concentration) symptoms, but focuses on problems with self-harm, aggression, risk-taking and inhibited exploration, self-soothing, and inadequate goal directed action that are not specified in PTSD; (d) The relational dysregulation criterion in DTD includes disengagement from relationships consistent with PTSD's avoidance/detachment symptom, and distrust and defiance that may be include PTSD's anger and irritability hyperarousal symptom, but identifies a much wider range of specific problems with trust, reciprocity, empathy, support-seeking, and related self-attributions than does PTSD; (e) The DTD requirement of at least one symptom from each PTSD symptom domain reflects the contribution of posttraumatic stress to the developmental impairments in DTD while not requiring full comorbidity with PTSD in all DTD cases; (f) The DTD duration criterion of six months distinguishes DTD as a chronic condition, in contrast to the potentially more time-limited acute manifestations of PTSD.

Depression/Dysthymia
DTD and depression/dysthymia may overlap with regard to dysphoria, negative self-perceptions, and distrust in relationships. However, depression/dysthymia does not address any other DTD symptom, including problems with affect modulation, behavioral disinhibition and aggression, and self-harm and self-soothing that are specified in DTD.

ADHD
The symptoms of affect dysregulation in DTD, including dissociation of affect and bodily states, are not characteristic of ADHD (Reyes-Perez, Martinez-Taboas, & Ledesma-Amador, 2005). ADHD's attentional problems are generalized while DTD involves attention problems specific to excessive or insufficient attention to threat or separation from secure relationships. ADHD's hyperactivity symptoms also are generalized whereas in DTD on behavioral extremes specifically are related to experiencing and attempting to cope with extremely intense or diminished affect states. Although self-esteem may be impacted in ADHD, poor self-schema, identity development and negative expectations of caregivers are not core features of ADHD as they are with DTD. The increased likelihood of a diagnosis of ADHD among child survivors of interpersonal trauma (Briscoe-Smith & Hinshaw, 2006; Davids & Gastpar, 2005; Endo

et al., 2006; Husain, Allwood, & Bell, 2008; Mulsow et al., 2001; Weinstein et al., 2000) thus may reflect problems with affective, behavioral, and relational self-regulation rather than (or in addition to) ADHD.

Oppositional-Defiant Disorder.
ODD overlaps with the DTD symptoms of temper loss, defiance, and possibly being argumentative and easily annoyed, but the ODD symptoms of blaming, deliberately annoying, and being spiteful and vindictive toward others are not characteristics of DTD. DTD specifically addresses affect and behavioral dysregulation other than that associated with anger or resentment, behavioral problems related to self-harm and withdrawal, and relational dysregulation associated with self-blame, insecurity, and impaired empathy.

Reactive Attachment Disorder
Both reactive attachment disorder (RAD) and DTD arise from severe disruption in protective caregiving. RAD is characterized by patterns of either social inhibition or disinhibition. Social inhibition and withdrawal in RAD may overlap with disengagement and distrust in DTD. Social disinhibition in RAD may overlap with DTD's behavioral (e.g., failure to use caregivers for social referencing in unfamiliar situations) or relational (e.g., excessive or promiscuous attempts to get intimate contact) symptoms. However, RAD differs from DTD in that it does not address: (a) the effects of interpersonal violence, (b) affect dysregulation, (c) behavioral aggression or risk-taking, (d) self-harm and self-soothing, or, (e) persistent negative sense of self.

Separation Anxiety Disorder
Separation anxiety disorder is characterized by attachment insecurity, and may involve altered schemas of trust and protection by others. However, separation anxiety disorder does not address features of DTD including: (a) the effects of interpersonal violence specifically, (b) affect dysregulation except with regard to anxiety, (c) behavioral aggression or risk-taking, (d) self-harm, or, (e) persistent negative sense of self.

Bipolar Disorder
The affect dysregulation, impulsivity, and breaks with reality found in bipolar disorder may overlap with DTD. However, affect dysregulation in DTD is not limited to shifts between mania and dysphoria, and DTD includes dissociated or diminished affect states. While manic states are characterized by grandiosity, DTD is characterized by a sense of the self as damaged or defective. DTD is not characterized by increases in goal-directed behavior or decreased need for sleep (though other sleep disturbance may be present). The impulsivity associated with Bipolar disorder does not share the tension-reduction and threat-based focus of risk-taking in DTD. Bipolar disorder does not address the relational dysregulation of DTD (e.g., impaired trust, empathy, reciprocity, and support-seeking) except as a secondary outcome of dysphoria or mania.

Dissociative Disorders
DTD includes specific symptoms of dissociation, but: (a) does not reference the primary dissociative disorder symptoms of depersonalization, derealization, or alter identities; and, (b) is specific only to a lack of awareness of affect or bodily states (DTD criterion B1) and avolition (DTD criterion C5, which does not necessarily require dissociation).

Personality Disorders
When discussing differential diagnosis of personality disorders, the DSM-IV states that "when personality changes emerge and persist after an individual has been exposed to extreme stress, Posttraumatic Stress Disorder should be considered" (p. 688). However, DTD represents more fundamental and chronic changes in the developing personality than PTSD. Though personality disorders include disturbances in affect, behavior, and relationships, personality disorders: (a) presuppose a fully formed personality which is not consistent with ongoing personality development throughout childhood; (b) separate symptoms that are addressed in an integrated manner in DTD into several different disorders involving distrust and suspiciousness (paranoid), affective and relational instability (borderline and narcissistic), social avoidance (schizoid), and disruptive behavior (antisocial) differ from DTD in the presentation of alterations in attention, consciousness and cognition. The strongest empirical relationship between childhood interpersonal trauma and personality disorders in adulthood has been found with borderline and paranoid personality disorders (Golier et al., 2003). Paranoid personality disorder does not address affect or behavioral dysregulation except as secondary to paranoid beliefs, and does not address negative self-perceptions. Borderline personality disorder does not problems with affect awareness, labeling, or dissociation (except indirectly in the form of transient dissociative states), avolition, or disorganized forms of interaction with primary caregivers (except indirectly secondary to abandonment fears and alternate idealization and devaluation). DTD may be found to be a precursor to these or other adult personality disorders if formalized as a childhood diagnosis.

Quantitative Data on Discriminant Validity. DTD is distinct from other psychiatric diagnosis. It is of note that DTD criteria, though they may often co-exist with full PTSD criteria, are nonetheless distinct from it and from other psychiatric diagnoses. For example, in the CCTC Dataset, though many children (by nature of the clinic's population) met criteria for PTSD, a distinct subset differed in a set of DTD-specific symptoms and was distinguished based upon DTD Criterion A1 and A2. Symptoms were not uniformly exaggerated in domains outside of those encompassed by DTD; for example, children who met DTD Criterion A did not have hallucinations. Similarly, in the NCTSN Core Data Set, although PTSD symptoms were prevalent, children who met DTD Criterion A did not experience symptoms of Obsessive-Compulsive Disorder, Panic Disorder, or Specific Phobias. In the CCTC Dataset, DTD+ children had experienced significantly ($p<.001$) more types of traumatic stress (3.36 vs. 2.21) and other adverse experiences (4.85 vs. 1.33) than children in the DTD- group for a combined average of 8.17 vs. 3.51. Notably, 15 of the 17 DSM PTSD symptoms were equally prevalent in the two groups. This is consistent with the findings of the five other measures of PTSD that PTSD prevalence and the number and severity of PTSD

symptoms in this sample were unrelated to exposure variables. Similarly, in the NCTSN Core Data Set, DTD Criterion A-exposed children had significantly different symptoms from their peers even when controlling for PTSD symptom severity. Thus, the higher frequencies of these DTD symptom items in the DTD+ exposed children are clearly not due to severity of PTSD symptoms. Nor do they appear to be due to general psychopathology: Ford, O'Connor and Hawke (in press) demonstrate that DTD-Criterion A-exposed children can be distinguished from other children admitted for inpatient psychiatry needs based upon their history of disruptions in caregiving, behavior problems and body mass.

Predictive validity. Though the DTD diagnosis considers functional impairment as part of its diagnostic criteria, it is important to establish that the DTD Criterion A exposure predicts functional impairment. According to the NCTSN Core Data Set, each increase in trauma exposure increases the odds ratio of functional impairment as follows: behavior problems, 12%, skipping school, 15%, suicidality, 13%, and criminality, 28%. Within the NCTSN Core Data Set, 41% of children had academic problems, 37% had school behavior problem,s and 48% had home behavior problems. Among DTD+ children in the CANS data base, 10% had legal problems, 15% had job functioning problems, and 16% had run away from home.

4) Is the entity sufficiently distinct from normal behavior – i.e., is it "clinically significant"?

DTD involves symptoms and impairments that are distinctly different from normal behavioral responses to stressors or to changes in psychobiological development. Children with DTD-like symptoms and impairments have been shown in numerous clinical and community studies to have very substantial functional problems due to symptoms in multiple domains including affect, behavior, and relational dysregulation.

As the diagnosis of DTD is dependent upon concrete historical events, it is necessary to establish that DTD Criterion A predicts the remaining DTD symptoms. As can be seen in Tables 5 and 6, DTD symptoms significantly correlate with DTD Criterion A. According to data from Ghosh Ippen and Lieberman (personal communication), the NCTSN Core Data Set, and Richardson (2009), symptom severity increased linearly with DTD Criterion A exposure. In the CANS database, one type of interpersonal trauma results in 1.54 times as many actionable symptoms as no interpersonal traumas, two types of trauma results in 2.54 times as many symptoms, and 3 types of interpersonal trauma results in 3.9 times as many symptoms.

Avoiding false positives. In the conceptualization and preliminary testing of this diagnosis, every attempt was made to avoid criteria which would lead to its inflated application. This effort is particularly evident in the restriction of the diagnosis' application to children who have experienced at least one year of ongoing trauma including both interpersonal violence and disruptions in caregiving. Some data suggests that either interpersonal violence or disruptions in caregiving may be sufficiently pathogenic. Furthermore, one year in the life of a young child may be beyond the

necessary time frame for pathogenesis. Therefore, though these criteria are established to reduce false positives, their merits should be subject to a field trial.

5) Does the entity have sufficient clinical utility? Is it clinically useful and important? (For example, does the proposed entity apply to a suffering group of people ho are receiving no diagnosis or an inaccurate diagnosis, which could adversely affect their treatment, course, etc?)

DTD developed as a result of input from clinicians in the National Child Traumatic Stress Network, American Psychiatric Association, American Psychological Association, and other mental health profession's lead organizations, and from advocacy organizations such as the National Alliance for Mental Illness, specifically calling for a diagnosis to describe the phenomenology and impairment of children they treat who have histories of developmentally adverse interpersonal trauma and attachment disruptions and symptoms that are not fully or accurately described by existing diagnoses. These children often were observed to receive multiple diagnoses and multiple treatment agents over long periods of time with refractory (often deteriorating) responses. The proposed DTD criteria are based on extensive clinical data from the NCTSN and input from many clinicians, and have been designed to be thorough but concise and clinically meaningful.

6) Does it have a non-zero prevalence?

The precise prevalence remains to be tested by a field trial. Based on NCTSN field data it is likely that as many as 15-25% of children referred for treatment with trauma histories (and a wide variety of diagnoses) would meet DTD criteria. By way of comparison, a comparable proportion, 24%, of these children were diagnosed with PTSD.

7) Are there specified diagnostic criteria?

Yes, attached.

8) Can these criteria be reliably assessed?

Reliability. Data from the CCTC Dataset were used to examine the scale reliability of DTD as a whole, and of each cluster. When all DTD symptoms and all PTSD symptoms were included, scale reliability was Cronbach's alpha = .91. When DTD symptoms were entered without PTSD symptoms, scale reliability was Cronbach's alpha = .95. PTSD symptoms alone had a Cronbach's alpha of .77. Cronbach's alpha for the remaining clusters were as follows: Cluster B = .81, Cluster C = .88, Cluster D = .83. These values represent reliability in the strong to excellent range.

Convergent Validity. Although efforts to assess DTD criteria have been coordinated amongst NCTSN affiliates, each investigator has pursued this topic

independently but nonetheless yielded similar results across distinct samples and utilizing distinct psychometric approaches. Therefore, one can conclude that the DTD diagnosis has initial indicators of convergent validity.

The criteria were designed to be concise, behaviorally specific, and clinically meaningful. Their reliability will require further empirical testing.

9) Can these criteria be fairly easily implemented in a typical clinical practice?

The criteria are brief, clear, and specific, and comparable to those for other DSM diagnoses. Pilot use of the criteria is beginning in several sites. Clinicians reviewing the criteria initially indicate that they appear to be readily implemented in practice.

10) Have enough data been published on the entity to warrant its entry into DSM?

Data from several hundred studies (summarized by van der Kolk et al., 2009) indicate that DTD-like syndromes are prevalent and linked to the types of developmentally adverse interpersonal trauma specified as the first criterion for DTD.

Limitations

Though we believe the data in support of DTD are persuasive, they are limited in several ways. First, the studies from which the presented data are drawn were not devised in the context of a specific existing diagnosis. Though many of the studies were designed with DTD-like criteria in mind, the exact criteria have taken shape with consensus and over time. Thus, the data are not all perfectly suited to address every question. Next, though the data presented here are fairly homogeneous, some data exist which are in conflict with these data. Some studies have found that some of these symptoms are not more prevalent in maltreated children than their peers. However, in our survey of the literature, such studies were few. Relavent meta-analytic investigations should be conducted to determine whether the existence of so few studies reporting data in conflict with DTD represents a file drawer problem. Finally, the data presented herein do not compare children to a group of nontraumatized psychiatric controls, which would help to further distinguish DTD symptoms from generalized psychopathology.

Future Directions

Several questions regarding the specifics of DTD criteria still need exploration. First and foremost amongst these questions are whether the conceptualization of Criterion A is accurate. It may be the case that the proposed duration of exposure is too short or too long, or may differ depending on the developmental period in which exposure occurs. It may also be the case that the specifier disruptions in caregiving does not add utility to the diagnosis; rather, exposure to prolonged interpersonal violence may be sufficient. Conversely, exposure to interpersonal violence may not be integral, either. It may be the case that exposure to any one of prolonged emotional abuse, separation from a caregiver, neglect, or interpersonal violence may be sufficient

for the diagnosis. Next, the specifics of the symptoms themselves merit further investigation. Perhaps some symptoms which we considered including, but did not include for the sake of parsimony, may be relevant. Other symptoms may merit revision in their wording.

Also meriting investigation is the developmental course of the illness. This diagnosis was designed specifically for application to children. How it might apply to adolescents, or how it may mature through adulthood is important to address. Furthermore, how the disorder manifests biologically and correlates with genetic factors is important to address.

In sum, Developmental Trauma Disorder represents consensus amongst leaders within the National Child Traumatic Stress Network and other leading researchers in the area of Developmental Psychopathology. We believe that this conceptualization has the potential to advance both science and the clinical utility of diagnosis within traumatized children. In order to create as accurate a diagnostic formulation as possible, however, future work must be done. With its 70 sites nationally and affiliations with superb researchers and clinical experts in the field of traumatic stress, the NCTSN is well positioned to conduct a field trial to investigate this topic further.

Table 2. NCTSN Core Data Set Descriptive Data

Descriptive Information	**DTD+[a] Children N(%)**	**DTD-[b] Children N(%)**
Male	819 (44.4)	1324 (51.1)
Female	1026(55.6)	1266 (48.9)
UCLA PTSD Reaction Index for DSM-IV (Met Criterion)		
Total Score	984(53.2)	1228(47)
Cluster B (Re-experiencing)	973(80.7)	1207 (71.9)
Cluster C (Avoidance)	693(57.4)	759 (45.2)
Cluster D (Hyperarousal)	993(82.3)	1197(71.3)

[a]Repeated exposure to violence (sexual abuse/assault, physical abuse/assault, domestic violence, or other extreme interpersonal violence) in combination with emotional abuse, impaired caregiver, and/or placement in foster care
[b]All others

Table 3. NCTSN Core Data Set Symptom Data

Symptom Measure	**Mean for DTD+[a] Children**	**Mean for DTD-[b] Children**	***t* =**	***P* =**	**Controlling for PTSD *P* =**
Self Report					
UCLA PTSD Reaction Index for DSM-IV					
Total Score	28.738	23.914	-6.825	.000	
Cluster B (Re-experiencing)	8.228	6.822	-8.290	.000	
Cluster C (Avoidance)	10.650	8.569	-8.415	.000	
Cluster D (Hyperarousal)	10.045	8.524	-8.605	.000	
Clinician Report					
Clinical Evaluation (Scale 0-2)					
ADHD	.4459	.4259	-.896	.370	NS
Attachment	.6494	.3049	-17.252	.000	.000
Conduct	.1233	.0986	-2.115	.034	.057
Depression	.7940	.6252	-7.555	.000	.000
Dissociation	.2549	.1391	-8.075	.000	.000
Generalized Anxiety	.5653	.4537	-5.395	.000	.046
General Behavior Problems	.8115	.6965	-4.441	.000	.000
OCD	.0428	.0307	-1.851	.064	NS
ODD	.3440	.3221	-1.134	.257	NS
Panic Disorder	.0570	.0326	-3.515	.000	.008
Phobic Disorder	.0205	.0249	.809	.418	NS
PTSD	1.023	.5833	-19.354	.000	NS
Substance Abuse	.2002	.0922	-7.466	.000	.000
Separation Disorder	.1902	.1410	-3.662	.000	.002
Inappropriate Sexualized Behavior	.2620	.1301	-8.556	.000	.000
Sleep Disorder	.1995	.1558	-3.045	.002	.147
Somatization	.2362	.1639	-4.767	.000	.021
Suicidality	.2048	.0931	-8.391	.000	.000
Traumatic Grief	.4538	.4156	-1.793	.073	NS
Indicators of Severity (Scale 0-2)					
Academic Difficulties	.8185	.8078	-.419	.675	NS
Alcohol Abuse	.1062	.0500	-5.823	.000	.000
Behavior Problems at Home	.9514	.7741	-7.187	.000	.000
Criminality	.1270	.0661	-5.669	.000	.000
Attachment Problems	.7766	.4345	-15.139	.000	.000
Behavior Problems at School	.7136	.6748	-1.539	.124	NS
Other Medical Problems	.3431	.1806	-8.786	.000	.000
Prostitution	.0090	.0055	-1.135	.256	NS
Running Away	.1064	.0508	-5.660	.000	.000
Substance Abuse	.1425	.0676	-6.367	.000	.000
Self-injurious Behaviors	.2197	.1322	-6.150	.000	.009
Skipping School	.2034	.1723	-1.922	.055	
Suicidality	.2663	.1595	-6.982	.000	.000
Inappropriate Sexualized Behaviors	.2885	.1667	-7.609	.000	.000

[a]Repeated exposure to violence (sexual abuse/assault, physical abuse/assault, domestic violence, or other extreme interpersonal violence) in combination with emotional abuse, impaired caregiver, and/or placement in foster care
[b]All others

Table 4. CANS Data

Symptom	DTD+ %	DTD- %
Adjustment to Trauma	49.04	21.23
Re- Experiencing	19.65	5.91
Avoidance	17.49	6.76
Numbing	13.78	4.86
Dissociation	5.15	1.40
Psychosis	3.42	1.14
Attention/Impulse	19.80	11.41
Depression	32.61	13.16
Anxiety	25.77	9.07
Oppositional	18.21	8.92
Conduct	10.31	4.83
Substance Use	6.74	2.75
Attachment	29.87	13.95
Affect Dysregulation	18.26	8.42
Behavioral Regression	5.92	2.75
Anger Control	26.64	12.99
Suicide Risk	5.15	1.46
Self Mutilation	4.43	1.61
Other Self Harm	4.91	2.28
Danger To Others	11.46	3.63
Judgment	20.47	8.69
Firesetting	2.07	0.79
Sexually Reactive Behavior	7.80	2.52

DTD+: n = 2076; DTD-: n = 3419

Table 5. CCTC Data: Correlations between DTD Criterion A Exposure and Symptom Measures

Symptom Measure	Mean for DTD Criterion A[a] Exposed Children	Mean for Non-DTD Criterion A[b] Exposed Children	*r* =	*P* <
Self Report				
UCLA PTSD Reaction Index for DSM-IV (n=111)				ns
Children's Depression Inventory (n=121)				ns
Reynolds Children's Manifest Anxiety Scale (n=114)				ns
Trauma Symptom Checklist for Children (n=111)				ns
Children's DES & Posttraumatic Symptom Inventory (n=114)				ns
DICA ADHD, Depression, Separation Anxiety, PTSD (n=90-114)				ns
DICA Conduct Disorder Symptoms	2.16	1.20	.245	.05
DICA Dysthymia Symptoms	1.54	.42	.277	.05
Caregiver Report				
UCLA PTSD Reaction Index for DSM-IV – Parent Version (n=135)	23.70	24.82		ns
Child Behavior Checklist Internalizing (n=156)	61.86	62.06		ns
Child Behavior Checklist Externalizing (n=156)	65.63	60.49	.227	.005
Child Behavior Checklist Total (n=156)	66.27	62.21	.181	.05
Child Dissociative Checklist (n=150)	10.92	7.77	.232	.001
Children's Sexual Behavior Inventory (n=70)	73.60	57.32	.339	.005
Clinician Report (n=110)				
Child Complex Trauma Symptom Checklist PTSD Items	11.05	9.78		ns
Child Complex Trauma Symptom Checklist Non-PTSD Items	23.38	13.22	.394	.005
Child Complex Trauma Symptom Checklist Dissociation Items	3.38	1.84	.355	.001
	% Clinical	**% Clinical**		
Clinical Dissociation Summary Variable[c] *(n=157)*	58%	35%	.229	.005

[a]Ongoing traumatic stress in combination with neglect, emotional abuse, and/or impaired caregiver
[b]Ongoing traumatic stress alone, isolated traumatic stress alone or in combination with neglect, etc.
[c]CDES>24 or CDC>11 or CCTSCL Dissociation>4 or CCTSCL Top 5 Dissociation>1

The La Rabida Children's Hospital Chicago Child Trauma Center sample consists of 172 children presenting to an urban child trauma clinic for trauma-focused assessment/treatment services. All had experienced at least one DSM PTSD Criterion A traumatic stressor, with 73% experiencing at least 2. Children in this sample also had very high levels of exposure to other adverse experiences (e.g., neglect, emotional abuse, incarcerated parent), with 64% experiencing 2 or more. It should be noted that this sample differs from many traditional clinical samples in that children were referred because they had been exposed to trauma, not necessarily because they were identified as disturbed or in need of general mental health services. Table 6 presents the frequency comparisons between DTD Criterion A exposed children (exposure to ongoing interpersonal violence in combination with disruptions of protective caregiving, n=55) and non-DTD Criterion A exposed children (e.g., violence exposure without disrupted caregiving, or other trauma, n=55) for the 34 CCTSCL items that were significantly correlated with DTD Criterion A exposure. Not surprisingly, children with histories of DTD Criterion A exposure had experienced significantly ($p<.001$) more types of traumatic stress (3.36 vs. 2.21) and other adverse experiences (4.85 vs. 1.33) than children in the non-DTD Criterion A group for a combined average of 8.17 vs. 3.51. Notably, 15 of the 17 DSM PTSD symptoms were equally prevalent in the two groups. This is consistent with the findings of the five other measures of PTSD that PTSD prevalence and the number and severity of PTSD symptoms in this sample were unrelated to exposure variables. Thus, the higher frequencies of these 34 symptom items in the DTD Criterion A exposed children are clearly not due to severity of PTSD symptoms.

Table 6. CCTC Data: Statistically Significant Differences in Frequencies of Clinician-Reported Symptoms[a] by DTD Criterion A

Symptom	DTD+[b] Children n=55	DTD-[c] Children n=55	*r* with DTD Criterion A	*P* <
Met DSM-IV Criteria for PTSD	69%	61%	.084	*ns*
Had trauma-related symptoms not accounted for by PTSD Criteria	66%	17%	.495	.001
PTSD Symptoms[d]				
Feelings of detachment or estrangement from others	73%	38%	.348	.001
Acting or feeling as if the traumatic event were recurring	66%	44%	.219	.05
Non-PTSD Symptoms				
Low feelings of self-esteem, self-confidence or self-worth[e]	76%	46%	.317	.005
Oppositional Behavior	64%	51%		*ns*
Dissociation of painful/negative affect	73%	60%		*ns*
Problems with anticipating consequences of actions	44%	27%		*ns*
Problems with age-appropriate capacity to plan and anticipate	40%	26%		*ns*
Problems with age-appropriate capacity to focus on and complete tasks	48%	29%		*ns*
Difficulty labeling and expressing feelings and internal experience	69%	49%	.203	.05
Problems with internalization of negative/painful affect	69%	46%	.239	.05
Difficulty knowing and describing internal states	68%	44%	.238	.05
Distrust of others	66%	33%	.327	.001
Feelings of guilt or shame	62%	31%	.310	.005
Feelings of being damaged or defective	60%	31%	.292	.005
Inability to self-soothe	56%	24%	.334	.001
Lack of expectancy of protection by others	56%	22%	.354	.001
Difficulty communicating wishes and desires	55%	26%	.297	.005
Difficulty understanding and complying with rules	49%	22%	.285	.005
Extreme affective shifts, including state shifts	47%	22%	.268	.01
Chronic depressed mood	46%	24%	.219	.05
Distorted cognitions of self, including negative self-image and appraisal	46%	16%	.315	.005
Interpersonal boundary issues	44%	15%	.320	.005
Volatile interpersonal relationships	44%	22%	.232	.05
Sexualized behavior	42%	9%	.376	.001
Depersonalization, derealization, or disorientation	38%	13%	.292	.005
Difficulty with perspective taking	38%	18%	.222	.05
Narrowed focus of attention	35%	16%	.209	.05
Difficulty attuning to other people's emotional states	35%	9%	.308	.005
Misperceptions of the current social context	35%	13%	.257	.01
Lack of ability to organize behavior to achieve rewards in environment	35%	15%	.232	.05
Shifts in awareness of self and environment	33%	16%	.190	.05
Over or under-estimation of risk	33%	9%	.291	.005
Self-injurious behavior	15%	4%	.190	.05
Discriminant Validity Items				
Hallucinations	7%	4%		*ns*
Talking about oneself in third person	4%	0%		*ns*

[a]Clinician Report Child Complex Trauma Symptom Checklist (Ford et al. 2007)
[b]Ongoing traumatic stress in combination with neglect, emotional abuse, and/or impaired caregiver
[c]Ongoing traumatic stress alone, isolated traumatic stress alone or in combination with neglect, etc.
[d]There were no differences between the groups for 15 of the 17 DSM PTSD Criteria items.
[e]This was the 3rd most frequently endorsed symptom for DTD Criterion A exposed children vs. 20th for other children.

Table 7.
Findings from NCTSN Survey, Core Data Set, CANS Study, and CCTC Study

Dataset	Symptoms															
	B1	B2	B3	B4	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	D6	E
NCTSN Survey	+	+	+		+	+	+			+	+	+	+			
NCTSN Core Data Set	+	+	+				+	+		+		+		+		+
CANS	+		+			+	+	+	--	+			+			+
CCTC	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+

Note: + = finding in positive direction; -- = finding in negative direction, blank cell = not assessed.

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